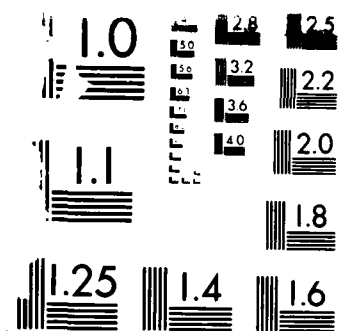


AD-A174 926 DHA (DEFENSE MAPPING AGENCY) MC48 (MAPPING CHARTING AND 1/1
GEODESY) VIDEO AND OPTICAL DISC(U) DEFENSE MAPPING
AGENCY HYDROGRAPHIC/ TOPOGRAPHIC CENTER WASHINGTON DC
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RESOLUTION TEST CHART
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DOCUMENTATION PAGE

1a. REPORT UNCLASSIFIED			1b. RESTRICTIVE MARKINGS N/A		
2a. SECURITY CLASSIFICATION AUTHORITY N/A			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; Distribution is unlimited		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE N/A					
4. PERFORMING ORGANIZATION REPORT NUMBER(S) N/A			5. MONITORING ORGANIZATION REPORT NUMBER(S) N/A		
6a. NAME OF PERFORMING ORGANIZATION Defense Mapping Agency		6b. OFFICE SYMBOL (If applicable) PAO	7a. NAME OF MONITORING ORGANIZATION N/A		
6c. ADDRESS (City, State, and ZIP Code) Washington, DC 20305-3000			7b. ADDRESS (City, State, and ZIP Code) N/A		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION DMA Hydrographic/Topographic PR-T--		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER N/A		
8c. ADDRESS (City, State, and ZIP Code) Center Washington, DC 20315-0300			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO. N/A	PROJECT NO. N/A	TASK NO. N/A
			WORK UNIT ACCESSION NO. N/A		
11. TITLE (Include Security Classification) DMA MC&G Video and Optical Disc					
12. PERSONAL AUTHOR(S) Jerry F. Edwards					
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM TO		14. DATE OF REPORT (Year, Month, Day) 1986 October	
15. PAGE COUNT 4					
16. SUPPLEMENTARY NOTATION DOD MC&G Conference 8-12 Oct 1986 Washington, DC					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD 08	GROUP	SUB-GROUP	MC&G Video Disc		
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
<p>The Defense Mapping Agency (DMA) is currently producing a series of Mapping, Charting and Geodesy (MC&G) Video Discs as a standard product to support the DoD MC&G user community. The series consists of 39 Constant Angular Velocity 12 inch MC&G Video Discs. The MC&G Video Discs are organized in a structure that allows an indexing system to locate and retrieve individual frames from each disc. To use the MC&G Video Disc requires a video disc player, a display monitor and a micro/mini computer system compatible with the indexing system software programs. As a result of this initial MC&G Video Disc program and other stated requirements, the Defense Mapping Agency is developing Product Specifications for the production of MC&G Video Disc and MC&G Optical Disc.</p>					
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20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL Jerry F. Edwards			22b. TELEPHONE (Include Area Code) (301) 227-2018		22c. OFFICE SYMBOL PRT

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DMA MC&G VIDEO AND OPTICAL DISC

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ABSTRACT

The Defense Mapping Agency (DMA) is currently producing a series of Mapping, Charting and Geodesy (MC&G) Video Discs as a standard product to support the DOD MC&G user Community. The series consists of 39 Constant Angular Velocity 12 inch MC&G Video Discs. The MC&G Video Discs are organized in a structure that allows an indexing system to locate and retrieve individual frames from each disc. To use the MC&G Video Disc requires a video disc player, a display monitor and a micro/mini computer system compatible with the indexing system software programs. As a result of this initial MC&G Video Disc program and other stated requirements, the Defense Mapping Agency is developing Product Specifications for the production of MC&G Video Disc and MC&G Optical Disc.



1. Background:

The current DMA MC&G Video Disc production program is a multi-year contract awarded in March 1983 and scheduled for completion in September 1987. The contract deliverables will be a geographic data base consisting of 39 twelve-inch Constant Angular Velocity MC&G Video Discs. This initial effort is in response to a National Security Council requirement to develop a briefing system using video disc technology. DMA conducted a video disc feasibility study and concluded that the most cost-effective means to satisfy the requirement was by commercial contract. DMA Hydrographic/Topographic Center (DMAHTC) was designated the lead Center to develop the Product Specifications for the MC&G Video Disc, and DMA Aerospace Center (DMAAC) has been designated the lead Center to develop the Product Specification for the MC&G Optical Disc.

2. MC&G Video Disc Product Development.

The DMA Video Disc standard product was developed from a requirement to establish feature positions as an integral part of intelligence briefings. The frame images are capable of being displayed on a variety of commercial televisions,

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industrial graphics, and large screen displays. Because of the varying resolution of the display systems and the requirement to produce a clear image, DMA product specifications dictated that equipment used to image, store, and produce video images during the production process have a minimum resolution of 360 lines.

a. The DMA MC&G Video Disc images are based on an aspect ratio of 4:3 (4 units horizontal and 3 units vertical). This is the current standard television screen width to height ratio established by the National Television Standard Committee (NTSC). Each separate image on the disc is based on this ratio and a single image is referred to as the field of view. The field of view does not relate to the map/chart scale, size, or content, but was determined by the legibility of the information (symbols, alphanumeric characters, etc.) and the area or coverage contained within the field of view. In general, maps/charts of the same type, scale and contiguous coverage have been mosaicked whenever possible. The frame size of all maps/charts in a mosaic is constant. The best image can be produced with a field of view of 2 inches by 1.5 inches, but it was determined not to be cost-effective when imaging large quantities of maps/charts to use this field of view. In most cases, it was determined that a 3 inch by 2.25 inch field of view was acceptable. Some maps/charts will support a field of view greater than 3 by 2.25 inches and are imaged at the largest field of view possible.

b. The image frames of each map/chart or mosaics of maps/charts are connected in a scan across the product. The scan is a sequential series of individual frame images which form a straight line or curved line when the center points or the individual frame images are connected. On the DMA MC&G Video Disc, the scan line formed by connecting the individual frame image center points is a line of constant latitude. When observing frame images being panned on a video display monitor, it is necessary to have overlap of adjacent frames along each scan line and overlap of adjacent scan lines to maintain continuity of perception. During the product development of MC&G Video Disc, it was determined that a 50% overlap of individual frames along each scan (east-west) and a 30% overlap between frames of adjacent scan lines (north-south) provided sufficient continuity of perception. The user requirement that generated the current DMA MC&G Video Disc product was to provide images for a briefing system that was primarily concerned with point or small areas of interest and the direction of movement which were considered not as critical as the capability to view the same point at different scales and amounts of detail.

c. The MC&G Video Disc containing the frame images is accompanied by an indexing system to access the map/chart images and text images from the video disc player. The indexing system is comprised of two parts. The first component is the indexing system program. This is an accessing computer program compatible with either a micro or mini computer. The second component is the indexing system data. This is the information that provides the data content organization of the MC&G Video Disc. The indexing system is compatible with the IBM PC, Apple IIe and VAX 11/780 computer systems. The mini-computer indexing system media is 9 track, 1600 bpi magnetic tape, ASCII Code, FORTRAN-77 language, and VAX/VMS operating system. The micro-computer indexing system media is single side, single density 5 1/4" floppy disc, Pascal language, and CP/M operating system.

d. The current DMA MC&G Video Disc program consists of 39 discs that portray the most current maps and charts available at the time of production, regardless if produced by DMA, coproduced, or native produced. In order to portray the geographic area covered at the various scales, the following DMA approved products may be included on each regional MC&G Video Disc: GNC, ONC, JNC, JOG, 1:50k, city products and hydrographic charts.

3. DMA Policy.

The Defense Mapping Agency has been tasked to support video display briefing systems requiring the display of standard maps and charts. An increase in these display requirements is anticipated to meet the more complex needs of C³I systems, high resolution simulators, avionics systems, and navigational systems.

a. DMA's policy is that standard maps and charts will be used to satisfy MC&G video display requirements. The standard map and chart products to be used are Operational Navigation Charts (ONC), Tactical Pilotage Charts (TPC), Joint Operations Graphics (JOG), Topographic Line Maps (high interest border area coverage only), Harbor and Approach Charts, and City Maps. The MC&G Video Discs are prepared in standard format by country and/or region.

b. The MC&G Video Disc map and chart material will be recorded as a series of overlapping (50% East-West and 30% North-South) pictures. Each individual picture on the Video Disc is known as a frame. Title and legend frames will also be available to describe and provide background information on the maps and charts on the MC&G Video Discs. Each MC&G Video Disc will contain DMA maps and charts which are the most current and available at the time of production.

c. The maps and charts to be placed on the MC&G Video Discs will be imaged by equipment which will define the center point and four corner points of each individual frame. Accuracy requirements for these points are based on map/chart scale and frame size (actual map area covered by each frame). The currently required accuracies will support briefing requirements, but are not intended to support target positioning or precision navigation.

d. DMA will fund all Department of Defense (DOD) requirements as validated by the Plans and Requirements Directorate (PR), HQ DMA.

DMA will provide one copy to non-DOD customers for any requirement validated by HQ DMA (PR). Requests for more than one copy per region will normally be funded by the non-DOD customers.

Non-Standard Product MC&G Video Discs are those that deviate from the DMA standard product specifications (product mix), but are similar enough (indexing software, disc size, scale range, and fields of view) to serve a broad set of users. Requests for such MC&G Video Discs will be considered on a case by case basis. Validation and funding will depend on intended use and number of copies required.

e. The Defense Mapping Agency is currently establishing the production and funding policy for the development of MC&G Optical Disc products and associated production standards.

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